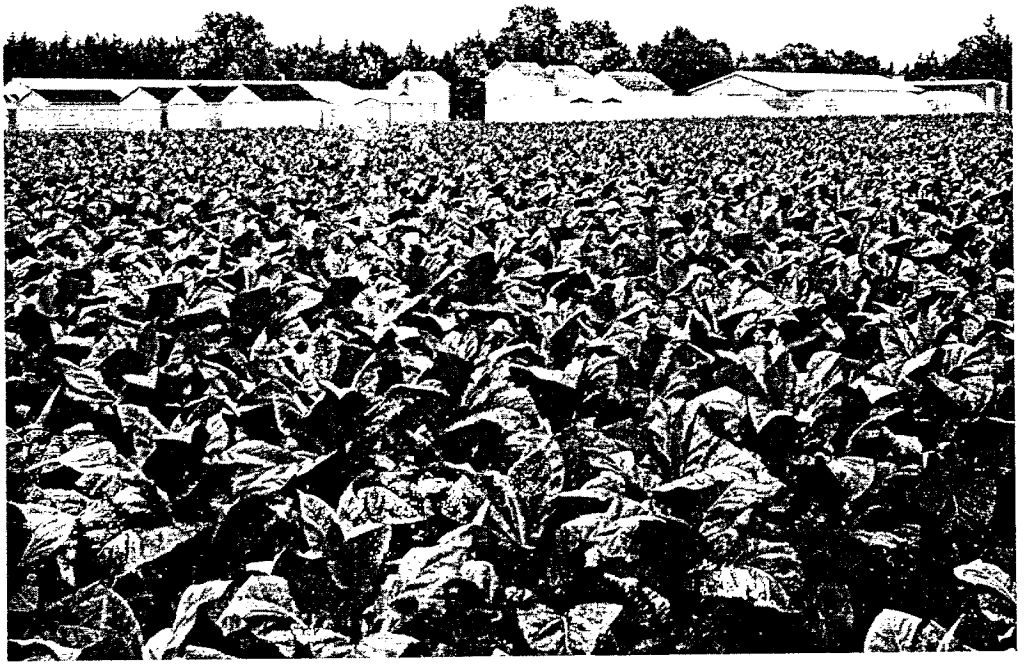

the lighter le briquet

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THE LIGHTER is published quarterly by Agriculture Canada. Its purpose is to provide information on the progress and development of the tobacco industry in Canada. Statistical and marketing information is provided by arrangement with Statistics Canada and Agriculture Canada's International Liaison Service.

LE BRIQUET est une publication trimestrielle d'Agriculture Canada. Elle renseigne sur les progrès de l'industrie du tabac au Canada. Les statistiques et données sur les marchés sont préparées en collaboration avec Statistique Canada et le Service de liaison internationale d'Agriculture Canada.

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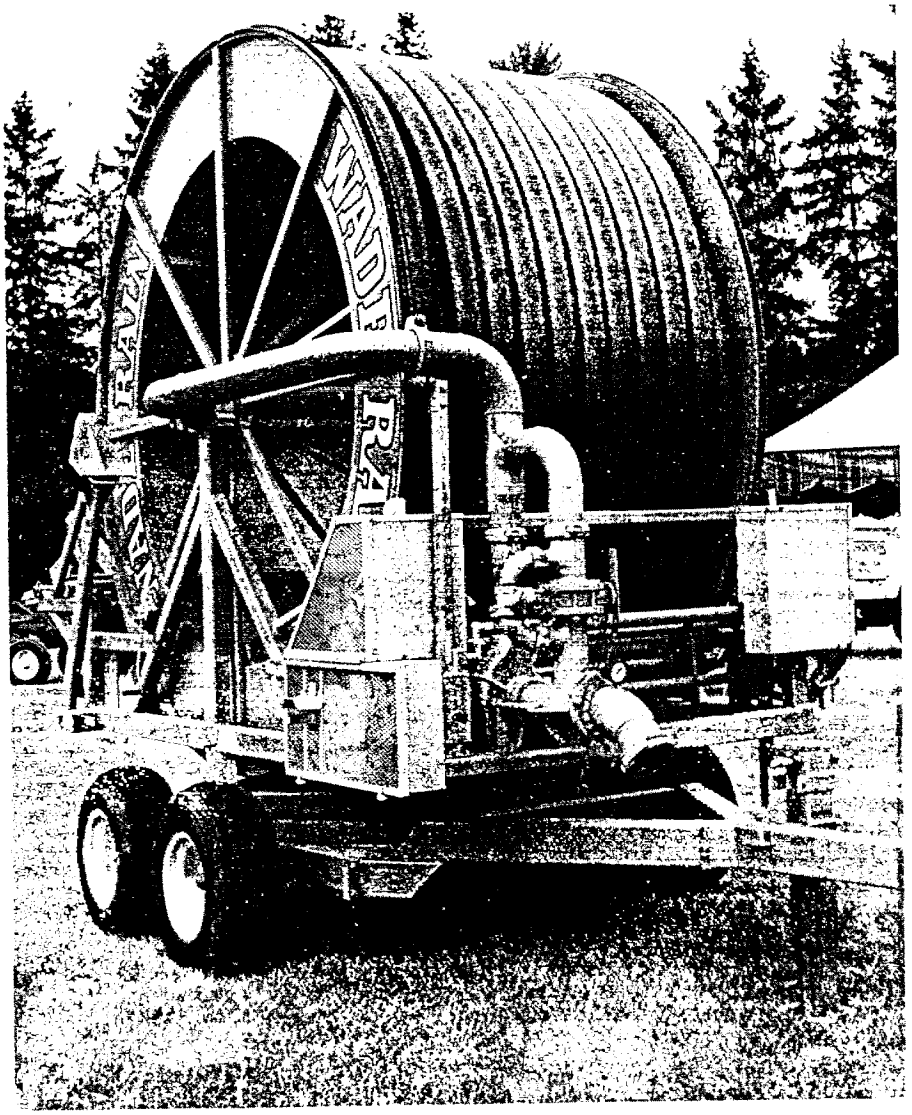
COUVERTURE Dans la région de Delhi, des installations modernes ne sont pas étrangères à une bonne récolte de tabac.



Heavy irrigation equipment was popular during the summer dry period in 1983.

Ces conduits d'eau, à la fois robustes et souples, ont été très en vogue durant la période sèche de l'été 1983.

THE LIGHTER

LE BRIQUET

TOBACCO TAXATION

An industry concern

T. PHALEN

The Canadian tobacco industry is growing more and more concerned about the automatic taxes paid by tobacco consumers.

On September 1 each year, the federal government automatically adjusts the excise tax on tobacco, based on the percentage change in the consumer price index for tobacco products. On or about April 1 each year, or more often, a similar tax calculation is made and put into effect in some provinces.

The increases at both levels add to the price index and result in new spiral of increases in the next round of tax assessments. In addition, whenever tobacco manufacturers, wholesalers or retailers apply legitimate markups to their products to cover rising costs, these raise the index further, triggering even more tax increases.

Faced with a new tax increase September 1, 1983, the tobacco industry launched a campaign against the system. Industry spokesmen say that steadily increasing prices of

Mr. Phalen is the coordinator of the Lighter.

LA TAXE SUR LE TABAC

Un sujet d'inquiétude pour l'industrie

T. PHALEN

Le secteur canadien du tabac s'inquiète de plus en plus des taxes automatiques imposées aux consommateurs de tabac.

Le 1er septembre de chaque année, le gouvernement fédéral ajuste automatiquement la taxe d'accise sur le tabac d'après la variation en pourcentage de l'indice des prix à la consommation des produits du tabac. Vers le 1er avril, ou plus souvent, certaines provinces procèdent à un calcul semblable et appliquent une nouvelle taxe sur le tabac.

Les hausses aux deux paliers font monter l'indice des prix et entraînent une nouvelle spirale d'augmentations dans le cycle suivant d'évaluation de la masse imposable. De plus, quand les fabricants de tabac, les grossistes ou les détaillants augmentent de façon légitime le prix de leurs produits pour couvrir des coûts croissants, l'indice se trouve à monter et la taxe aussi, par conséquent.

Devant la nouvelle augmentation des taxes le 1er septembre 1983, le secteur du tabac a lancé une campagne

M. Phalen est coordonnateur au *Briquet*.

tobacco products and the nature of the tax place an unfair burden on consumers and, subsequently, on the industry itself.

The Ontario Flue-Cured Tobacco Growers' Marketing Board kicked off the producers' facet of the campaign by meeting with MPs, MPPs and municipal representatives from the five principal ridings in the province's tobacco-growing area.

Producers say that they bear the brunt of heavy taxation. They argue that they are continually placed in an "input cost-market returns" squeeze because of their weak bargaining position. This position features a few large suppliers of agricultural inputs on one hand and a few large tobacco-buying companies on the other, who buy according to competitive world prices. Where there is price resistance in product sales a portion of the price increases must be absorbed somewhere along the production-processing-marketing chain. As the link least able to shift costs into the final price, producers have experienced a steady decline in their cost-returns situation.

Automatic increases (or any increase) in tobacco taxation accentuate the problem because market demand is unduly affected to the detriment of growers in terms of revenue and quantity sold.

The federal government is aware of the problems the industry faces and has established an interdepartmental task force to look into tobacco taxation in Canada.

pour dénoncer cette situation. Selon ses porte-parole, la hausse régulière du prix des produits du tabac et la nature de la taxe imposent un fardeau injuste aux consommateurs et, par conséquent, à l'industrie elle-même.

L'Office de commercialisation des producteurs de tabac jaune de l'Ontario a amorcé le volet de la campagne livrée par les producteurs en rencontrant les députés fédéraux, les députés provinciaux et les représentants municipaux des cinq principales circonscriptions de la zone productrice de tabac de la province.

Les producteurs disent porter le poids de cette lourde taxation. D'après eux, à cause de leur faible pouvoir de négociation, ils se retrouvent continuellement dans un étau, entre quelques gros fournisseurs de moyens de production agricole, d'une part, et, d'autre part, quelques grosses entreprises qui leur achètent leur tabac selon les prix mondiaux concurrentiels. Lorsque les ventes connaissent une résistance, une partie de la hausse des prix doit être absorbée quelque part le long de la chaîne de production-transformation-commercialisation. En tant que maillon le moins apte à transposer les coûts dans le prix final, les producteurs subissent une détérioration constante de leurs bénéfices.

L'augmentation automatique (ou toute augmentation) de la taxe imposée sur le tabac accentue le problème, car la demande du marché s'en ressent au détriment des producteurs qui voient diminuer leurs revenus et l'importance de leurs ventes.

Le gouvernement fédéral, conscient des problèmes qui frappent le secteur, a formé une équipe de travail interministérielle pour examiner la taxe sur le tabac au Canada.

PROGRESS OF THE CANADIAN TOBACCO CROP

ONTARIO

FLUE-CURED TOBACCO Transplanting of the 1983 crop was completed by June 12. The long, hot summer has proven excellent for the tobacco crop. Plants have generally produced 1-2 more harvestable leaves than usual. Dry weather through June and July necessitated two to three irrigations by most growers.

Extreme rainfall, 237 mm between July 29 and August 19 caused some harvest delays and plant drowning in low-lying areas. Some hail and wind damage has occurred in scattered areas of the tobacco producing region. Losses range from 1-2 leaves to total. Indications are that about 30 crops were completely destroyed with larger numbers sustaining varying amounts of partial damage. No loss occurred at the Delhi Research Station.

Despite weather-related crop losses, the flue-cured tobacco crop is expected to reach the production target of approximately 97,500,000 kg. Harvesting was in full swing by August 8 and to date, September 9, is approximately 75% completed.

The major variety grown this year is Delgold on approimately 90% of the Ontario crop. Blue mold was reported and confirmed on three farms in Norfolk county between August 8th and 16th. Damage was not serious in any of the locations and loss was negligible.

The three tobacco Auction Exchanges, Aylmer, Delhi and Tillsonburg are scheduled to open on October 3rd.

P.W. JOHNSON

PROGRÈS RÉALISÉS DANS LA CULTURE DU TABAC AU CANADA

ONTARIO

TABAC JAUNE En 1983, le repiquage a pris fin le 12 juin. L'été long et chaud a grandement favorisé la culture. Les plants ont en effet produit de une à deux feuilles récoltables de plus que d'habitude. En raison du temps sec de juin et de juillet, la plupart des producteurs ont dû irriguer deux ou trois fois leurs champs.

Les abondantes chutes de pluie enregistrées entre le 29 juillet et le 19 août (237 mm) ont retardé les récoltes et noyé les champs des terres basses. La grêle et le vent ont également nui à certaines récoltes ici et là, dans la région de culture du tabac. Les pertes vont de une à deux feuilles à la destruction complète des plantes. Il semble qu'environ 30 récoltes aient été complètement détruites et qu'un grand nombre d'exploitations affichent des pertes partielles plus ou moins importantes. Toutefois, la Station de recherches de Delhi n'a enregistré aucune perte.

Cependant, en dépit des pertes causées par le mauvais temps, on s'attend tout de même à atteindre l'objectif de production, fixé à environ 97 500 000 kg. Les récoltes allaient bon train le 8 août et le 9 septembre, elles étaient terminées dans une proportion de 75 %.

La variété la plus cultivée cette année est la Delgold (environ 90 % en Ontario). Du 8 au 16 août, on a rapporté et confirmé la présence de la moisissure bleue dans trois fermes du comté de Norfolk. Cependant, la maladie n'a causé que des dommages bénins qui n'ont entraîné que des pertes négligeables.

QUEBEC

FLUE-CURED TOBACCO Growers had to irrigate more often than usual because of the small amount of precipitation received after planting. Unlike the situation in 1982, the crop was not damaged by hail or early frosts. Insects and disease did not affect the crop significantly. A total of 141 growers planted 3,335 hectares in 1983. This represents a slight decrease of 4.8 hectares from 1982. The cultivar Delgold was grown on 92.7% of the cultivated area. Virginia 115, Newdel and Delhi account for 4.2%, 1.8% and 1.3% respectively. The harvest is coming along well under favourable climatic conditions, and crop yield per hectare and quality should match levels of previous years, as a result of showers in recent weeks.

CIGAR TOBACCO The cultivated area in 1983 totalled an estimated 261.7 hectares, as compared with 265.9 hectares last year. The number of crops also showed a slight decline (153 in 1983, as compared with 167 last year).

PIPE TOBACCO The number of crops rose from 16 in 1982 to 18 in 1983, and area was also up from 15.3 to 19.8 hectares. This seems to be the first increase for this crop in recent years.

J.P.F. DARISSE

Les encans d'Aylmer, de Delhi et de Tillsonburg ont eu lieu le 3 octobre 1983.

P.W. JOHNSON

QUÉBEC

TABAC JAUNE Les producteurs ont eu à irriguer plus que d'habitude cette année en raison de faibles précipitations depuis la plantation. Contrairement à 1982, il n'y a eu aucun dommage par la grêle ou des gelées hâtives; les maladies et les insectes n'ont pas eu d'effets sensibles sur la culture. Un total de 141 producteurs ont planté 3335 ha en 1983, ce qui représente une diminution de 4,8 ha par rapport à 1982. Le cultivar Delgold a été utilisé sur 92,7 % de la superficie cultivée, suivi de Virginia 115 (4,2 %), Newdel (1,8 %) et Delhi 76 (1,3 %). La récolte progresse bien sous des conditions climatiques favorables et la production par hectare s'annonce aussi bonne en quantité et en qualité qu'au cours des années précédentes, grâce à quelques averses de pluie enregistrées au cours des dernières semaines.

TABAC À CIGARE La superficie cultivée en 1983 est estimée à 261,7 ha, comparativement à 265,9 ha l'an dernier. Le nombre de récoltes a également regressé, passant de 167 en 1982 à 153 cette année.

TABAC À PIPE Le nombre de récoltes est passé de 16 à 18 et la superficie de 15,3 à 19,8 ha en 1983 par rapport à l'an dernier. Il semble que ce soit la première fois qu'un accroissement de cette récolte est noté au cours des dernières années.

J.P.F. DARISSE

MARITIMES

Early growing conditions for tobacco in the Maritimes were very good, especially the last part of June.

Very little rainfall, especially in Nova Scotia, and cool night temperatures during the first part of July resulted in unfavourable growing conditions.

The growth stage of most tobacco in the Maritimes was not advanced enough to be affected by a storm of heavy rain and strong wind that occurred July 22.

Approximately 85% of the P.E.I. crop is Islangold with the remaining hectarage comprised of Delgold.

The N.B. crop is 100% Islangold.

In N.S. approximately 92% of the crop is Delgold with the remaining 8% Newdel.

The fourth annual P.E.I. Growers Twilight Meeting, held on August 3, was a great success and well attended by all sectors of the Maritime tobacco industry.

With optimistic hopes for the 1983 crop harvest was well underway by mid-August.

W. ARSENAULT

MARITIMES

La culture du tabac a connu de très bonnes conditions de croissance dans l'Atlantique au début de la saison, particulièrement durant la dernière moitié de juin.

Par contre, au début de juillet, le manque de précipitations, surtout en Nouvelle-Écosse, et des nuits fraîches ont ralenti la croissance.

La plupart des plants de tabac dans la région n'étaient pas assez avancés pour subir les méfaits d'une pluie diluvienne accompagnée de vents violents le 22 juillet dernier.

La variété Islangold recouvre près de 85 % de la culture du tabac à l'Île-du-Prince-Édouard et le reste des superficies comprend de la Delgold.

Au Nouveau-Brunswick, la totalité de la culture consiste en Islangold.

En Nouvelle-Écosse par contre, la Delgold occupe près de 92 % des superficies et le reste de la culture comprend de la Newdel.

La quatrième Réunion annuelle des producteurs de tabac de l'Île-du-Prince-Édouard, qui a eu lieu le 3 août, a été un franc succès; y assistaient plusieurs représentants de tous les secteurs de l'industrie du tabac de l'Atlantique.

La récolte du tabac de 1983, qui s'était déjà bien amorcée à la mi-août, augurait bien.

W. ARSENAULT

REGULATORY AGENDAS

Under the coordination of Treasury Board's Office of Regulatory Reform, regulatory agendas listing proposed changes to federal regulatory activities will be published twice-yearly as a supplement to Part I of the Canada Gazette. Ten departments and four agencies will provide these regulatory reports. The first complete agenda was published May 31.

In addition, Agriculture Canada's agenda material is available separately.

. Both the full regulatory agenda and Agriculture Canada's section will be available by subscription for $25 and $5 respectively through the Canadian Government Publishing Centre.

The goal in publishing the agendas is to give the public advance notice of regulatory changes being considered and a chance to have significant input before decisions are made.

This is designed to stimulate discussion, improve consultation and lead to regulations that are more effective while reducing the regulatory burden on industry and individuals.

For each proposed regulatory initiative, the department lists the problem being addressed, the potential action, legal authority, the current status, and the official to contact who can answer questions.

The agendas also report on policy reviews and analyses planned or underway, and provide a schedule of regulatory reviews.

Departments involved in providing regulatory agenda information are: Agriculture, Communications, Consumer and Corporate Affairs, Energy, Mines and Resources, Environment,

ÉTATS DE PROJET DE RÉGLEMENTATION

Sous la coordination du Bureau de la réforme de la réglementation du Conseil du Trésor, l'administration fédérale publiera deux fois par année dans le supplément de la partie 1 de la *Gazette du Canada,* sous la rubrique « États de projet de réglementation », les modifications qu'elle se propose d'apporter à la réglementation fédérale. Dix ministères et quatre organismes alimenteront en information les responsables de ces rapports. Le premier état complet a été publié le 31 mai.

Il est possible d'obtenir séparément un exemplaire du matériel que prépare Agriculture Canada dans le cadre de ce programme.

On peut même s'abonner aux états de projet de réglementation et à la partie concernant Agriculture Canada auprès du Centre d'édition du gouvernement canadien; les abonnements sont fixés respectivement à 25 et 5 $.

Ces états visent à renseigner le public sur les projets de remaniement à l'étude et, ainsi, à lui donner la chance de participer activement au processus de discussion préalable à la prise des décisions. Le gouvernement désire ainsi stimuler les échanges de vues, améliorer la consultation et aboutir à une réglementation mieux adaptée aux besoins et moins astreignante pour le secteur privé et les gens en général.

Vis-à-vis de chacun des projets de modification, le Ministère précise la nature du problème à régler, les mesures éventuelles à prendre, les assises législatives pertinentes, la situation courante et le fonctionnaire à qui il faut s'adresser pour obtenir des précisions.

Fisheries and Oceans, Health and Welfare, Indian Affairs and Northern Development, Labour and Transport.

For more information, contact Dan Harkin or Susan Greene in the Regulatory Affairs Division of the Food Production and Inspection Branch, telephone (613) 992-2114.

Les états de projet renseignent aussi sur les études de politiques et sur les analyses prévues ou en cours, en plus de contenir un calendrier des activités d'examen de la réglementation.

Les ministères qui participent à la prestation d'information en vue de la préparation des états sont les suivants: Agriculture; Communications; Consommation et Corporations; Énergie, Mines et Ressources; Environnement; Pêches et Océans; Santé et Bien-être; Affaires indiennes et du Nord; Travail; et Transport.

Pour obtenir de plus amples renseignements, il suffit de communiquer avec Dan Harkin ou Susan Greene à la Division des affaires de réglementation de la Direction générale de la production et de l'inspection des aliments au numéro (613) 992-2114.

PHYSIOLOGY, CHEMISTRY AND TOBACCO SMOKE

DR. W.A. COURT

Physiology, Chemistry and Tobacco Smoke is the fifth in a series of research requirement reports adapted for the Lighter from Agriculture Canada's Second Work Planning Meeting on Tobacco held at Simcoe, Ontario, July 22 and 23, 1982.

CONTRIBUTORS

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The objective of tobacco research has been to produce simultaneously tobacco of optimum quality and high yield. Due to its subjective nature, the assessment of tobacco quality is often quite difficult and has always represented a challenge for chemical research. The problem is compounded because of tobacco smoking and health related problems. These uncertainties remain in spite of the fact that tobacco is one of the most exhaustively studied materials in plant research. I propose to review the status at the time of the last work planning meeting, highlight some of the work of the past five years, evaluate possible directions of future work, and finally open the meeting for discussion.

The final recommendations of the last work planning meeting at L'Assomption, Quebec, did not include any pertinent recommendations to this session; however, the utilization syndicate did consider the health question. It appears that much of the discussion centred around the feasibility of tobacco sheet and manufacturing techniques in meeting projected standards, although the use of plant breeding and crop management were also briefly considered. The current status of the tobacco sheet program will be discussed in one of tomorrows sessions, so it will not be considered at this time.

A discussion of this type would not be complete without an examination of changes that are occuring in the cigarette market. Since 1977 there has been a 14.7% drop in sales weighed tar values of Canadian cigarettes (Table 1). This is reflected in a continued decline in the sale of cigarettes with tar levels over 15 mg (Table 2) and a proliferation of cigarettes in the low tar segment of the market (Table 3). Since the Canadian Tobacco Manufacturers Council has agreed with Health and Welfare to a sales weighed average of 12 mg by the end of 1984, the trend of the past five years will probably be continued. Thus, the tobacco industry will require tobacco with lower tar/nicotine ratios but with increased taste.

Dr. Court is a research scientist at Agriculture Canada's Research Station, Delhi, Ontario.

TABLE 1. CANADIAN CIGARETTE MARKET SALES WEIGHTED AVERAGE "TAR"

	Sales weighted	Yr/Yr change		Accumulated change	
Year	Ave. 'tar' (SWAT)	SWAT	%	SWAT	%
1973	16.96				
1974	16.94	–.02	–.01	–.02	–0.1
1975	17.02	+.08	+0.5	+.06	+0.4
1976	16.61	–.41	–2.4	–.35	–2.1
1977	15.75	–.86	–5.2	–1.21	–7.1
1978	15.04	–.71	–4.5	–1.92	–11.3
1979	14.20	–.84	–5.6	–2.76	–16.3
1980	13.66	–.54	–3.8	–3.30	–19.5
1981	13.43	–.23	–1.7	–3.53	–20.8

TABLE 2. SHARE OF MARKET BY TAR SEGMENT

Year	Over 15 MG	15 MG and less	12 MG and less	5 MG and less
1973	79.4	20.6	8.3	0
1974	80.7	19.3	6.5	0.5
1975	78.1	21.9	7.4	0.7
1976	73.8	26.2	12.5	1.7
1977	64.7	35.3	16.4	3.8
1978	56.7	43.4	21.0	5.2
1979	51.3	48.4	25.5	6.1
1980	45.5	54.3	33.0	6.9
1981	42.6	57.6	34.5	7.6

TABLE 3. INDUSTRY "TAR" OPTIONS

"Tar" segments	1975	1976	1977	1978	1979	1980	1981	March 1982
1 – 5 mg	1	1	9	10	11	16	16	20
5 – 9 mg	4	5	4	7	10	11	14	14
10 – 14 mg	12	20	31	31	37	40	46	47
15 – 18 mg	43	50	51	51	51	47	45	42
19 mg +	19	18	11	5	4	–	–	–
Total # of Tar Options	79	94	106	104	113	114	121	123

A good deal of chemistry has been done on tobacco and tobacco smoke since the last work planning meeting. The work has included basic and applied research on a wide range of problems with a number of chemical fractions. This has been reflected by the publication in the past five years of new analytical procedures for nonvolatile organic acids, fatty acids, leaf pigments and phenolic constituents. The reported procedures represent only a fraction of the tobacco and tobacco smoke constituents examined. Therefore, it is not practical to include more than a small portion of the work in a short presentation. I have chosen a few examples which illustrate the scope of the work. In addition, I chose an example from each individual submission which was received.

The first example involves the study of the influence of applied N on the composition of flue-cured tobacco. Nitrogen has a more pronounced effect on the growth and quality of flue-cured tobacco than any other essential element. The study provided needed quantitative information concerning N nutrition and chemical composition. The choice of N treatments provided some insight into the chemical variations attainable within flue-cured tobacco. The study included chemical parameters which are important for tobacco quality, smoking and health. (Table 4). Tar and carbon monoxide are obvious examples pertinent to smoking and health. Solanesol which is a source of a portion of the polynuclear aromatic hydrocarbons (PAH) in smoke, and chlorogenic acid which may be the origin of a part of the catechols in tobacco smoke are perhaps not so obvious.

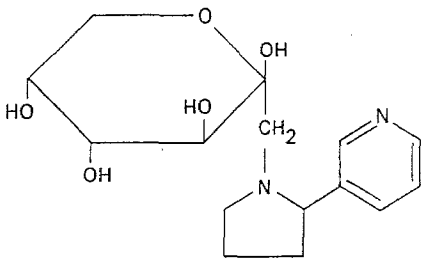
TABLE 4. INFLUENCE OF FERTILIZER NITROGEN ON THE COMPOSITION OF FLUE-CURED TOBACCO

Component		Component		Component		Component	
Phenolic constituents		Lipids				Minerals	
Chlorogenic acids (3)	–	Myristic	N	Solanesol	+	Ash	+
Rutin	–	Palmitic	–	Neophytadiene	+	Calcium	+
Scopolin	–	Oleic	–	Duvatrienediols	–	Magnesium	+
Scopoletin	+	Linoleic	–			Potassium	+
		Linolenic	N	Chlolesterol	N		
				Stigmasterol	N		
				Sitosterol	N		
				Campesterol	N		
Nonvolatile organic acids					–	Smoke Parameters	
Oxalic	N					Tar	N
Malonic	+	Neoxanthin	+	Paraffins (25)	N	Total alkaloids	+
Fumaric	+	Violaxanthin	+	Cytoplasmic lipids	+	pH	+
Succinic	+	Lutein	+	Surface lipids	N	PMI	N
Malic	+	Carotene	+	Hexane extracts	+	CO	N
Citric	+	Chlorophyll a	+			CO_2	N
		Chlorophyll b	+				
Nitrogen constituents							
Total alkaloids	+						
Total N	+						
Amino acids (16)	+						

(+) positive relationship, (–) negative relationship, N = no influence

The subjective nature and complexity of tobacco quality have always made chemical assessment difficult. Perhaps the only chemical parameter universely accepted would be alkaloid content. Fortunately this concept appears to be rapidly changing. The tobacco pigments and terpenes are two examples of chemical parameters which have been suggested as important for tobacco quality. Their importance to tobacco quality is primarily through their contribution to flavour and aroma. N nutrition has a substantial influence on these two classes of compounds.

The second example illustrates the continued effort to more fully characterize tobacco. Nornicotine fructose (I) was isolated from flue-cured tobacco. The component was isolated from the cultivar Delhi 76 in approximately 1% on a dry weight basis. This tobacco component is the result of a Amadori rearrangement between nornicotine and glucose.



I

Grey tobacco is a disorder found to various degrees throughout the Canadian tobacco growing regions. Grey tissue was found to contain significantly less N, P, K, Ca and B, significantly more Fe and A1 but significantly less nonvolatile organic acids, and total alkaloids. Although not the only element involved, Fe was implicated as a causal factor in grey tobacco. The grey effect in tobacco plants could be produced in plants grown with different amounts of Fe.

Tobacco plants grown in soil known to produce grey tobacco were treated with N, P, K, lime and manure. Lime and manure both decreased the amount of grey tobacco but a combined treatment of the two drastically reduced grey tobacco to between 0 and 1%. These treatments increased soil pH, decreased leaf Fe, Mn, Mg and increased quality ($/kg) and return indices ($/ha).

The final example is from a cooperative research program with Agriculture Canada, Health and Welfare Canada and the University of Guelph. A set of 25 (Table 5) experimental cigarettes was manufactured from various treatments, including cast tobacco sheeting of bright and burley tobacco, and a tobacco substitute (Cytrel^{R}) each tipped with either a high efficiency cellulose acetate or charcoal filter. The contents of the cigarettes were analyzed for tobacco filling value, total alkaloids, reducing sugars, ash, total nitrogen, true protein nitrogen, fibre, lignin and cellulose. Cigarette parameters measured were weight, pressure drop, puff number, total particulate matter, nicotine, phenols, cresols, neophytadiene, nitromethane extractibles, carbon monoxide, carbon dioxide, hydrogen cyanide, acetaldehyde, acrolein, total aldehydes, and pH. Generally the analytical data indicated that the amounts of toxic cigarette smoke components were reduced with tobacco sheeting.

TABLE 5. DESCRIPTION OF TEST CIGARETTES SHOWING RELATIVE PROPORTIONS OF BRIGHT LEAF LAMINA AND STEM BLEND, REGULAR AND SHEETED; SHEETED CHOPPED WHOLE PLANT (CWP) LAMINA AND STEM PLUS STALK; AND SUBSTITUTE (CYTREL).

Treatment		Sample proportion			
No.	Description	Lamina	CWP lamina	Bright stem blend	CWP stem plus stalk
1.	Bright whole plant leaf	3		1	
2.	Bright lower leaf	3		1	
3.	Bright middle leaf	3		1	
4.	Bright upper leaf	3		1	
5.	Bright whole plant leaf-high stem ratio	1		1	
6.	Bright whole plant stem	–		1	
7.	Burley whole plant lamina	3		1	
8.	Bright whole plant leaf sheet[a]	3		2	
9.	Bright whole plant leaf sheet – high stem ratio	1		2	
10.	Bright whole plant stem sheet	–		1	
11.	Bright lower leaf sheet	3		2	
12.	Bright middle leaf sheet	3		2	
13.	Bright upper leaf sheet	3		2	
14.	Burley whole plant lamina sheet	3		2	
15.	Bright whole plant leaf (50%), and CWP lamina sheet (50%)	3	3	1	2
16.	CWP lamina sheet		3		2
17.	Bright whole plant leaf sheet with high efficiency cellulose acetate filter	3		2	
18.	Bright whole plant leaf sheet with charcoal filter	3		2	
19.	Burley whole plant lamina sheet with high efficiency cellulose acetate filter	3		2	
20.	Burley whole plant lamina sheet with charcoal filter	3		2	
21.	Bright whole plant leaf (50%), and CWP lamina sheet (50%) with high efficiency cellulose acetate filter	3	3	1	2
22.	Bright whole plant leaf (50%), and CWP lamina sheet (50%) with charcoal filter	3	3	1	2
23.	Bright whole plant leaf (75%), and Cytrel (25%)	3		1	
24.	Bright whole plant leaf (50%), and Cytrel (50%)				
25.	Cytrel	–		–	
26.	Monitor C	–		–	

[a]Treatments involving tobacco sheet samples – the proportions indicated for lamina, stem and stem plus stalk refer to initial proportions in PCL process.

The next five years will continue to see the expansion or intrusion of chemistry into tobacco production. The major impetus for this work will be smoking and health which remains the dominant force behind a large part of chemical research. A large portion of this work will be conducted to produce more flavourful tobacco which is required for low tar delivery cigarettes.

Fundamental studies are being carried out on the flavour and aroma characteristics of tobacco throughout the world. These studies could eventually have an impact on the Canadian tobacco situation and in particular the export market. It is possible that the development of earlier maturing varieties or cultural practices may in part provide more flavourable tobacco. In addition, the advent of artificial flavours may be important. Unfortunately, it is unlikely that these will have sufficient impact to meet future requirements for more flavourable tobacco. A comprehensive program must be undertaken to develop tobacco with an improved chemical blend.

A renewed effort must also be undertaken to identify and eliminate detrimental tobacco smoke components. This is required because a large portion of the population continues to smoke and will continue to do so for the forseeable future. They continue to smoke despite extensive advertising and public awareness of the hazards of smoking. An alternative strategy is to reduce the risk of disease in smokers by modifying the tobacco product.

Finally a continued effort to apply chemical and biochemical technology to production problems must be continued. The grey tobacco example illustrated this concept. Successful solutions to production problems contribute to the overall uniformity and quality of the tobacco crop.

RECOMMENDATIONS

1. Initiate research on the production of more flavourful tobacco. This includes establishing the chemical relationships involved, the development of fast and reproducible procedures for assessment, and apply this technology to tobacco production.
2. In order to maintain a viable industry, more effort is required in the identification and elimination of tobacco components which may contribute to an increased health hazard to the smoker.
3. Continued effort is required to evaluate the relationships among key tobacco/tobacco smoke constituents, production practices, and traditional tobacco quality concepts.
4. Continued effort must be shown to apply chemical and biochemical technology to the solution of production problems.

A SURVEY OF FLUE-CURED TOBACCO GROWN IN ONTARIO IN 1981

Part II: Soil Characteristics and Nutrient Elements

J.M. ELLIOT, R.P. BEYAERT, and R. POCS

En 1981, les teneurs en manganèse étaient légèrement plus élevées; celles du phosphore, du magnésium, du cuivre et du zinc se sont maintenues à peu près au même niveau et les teneurs en potassium, en calcium et en fer étaient légèrement plus faibles que la moyenne à long terme (1970-1980) pour le tabac jaune cultivé dans des fermes caractéristiques de l'Ontario.

Depuis 1970, chaque année, on mène une enquête dans les fermes de l'Ontario pour obtenir une évaluation régulière de la composition chimique et de certaines caractéristiques physiques des feuilles de tabac prélevées à différentes hauteurs sur la tige. Des 32 fermes originales, 21 faisaient partie de l'étude de 1981. Avec les années, 13 nouvelles fermes caractéristiques se sont ajoutées, la dernière ayant été remplacée en 1978.

In 1981, levels of manganese were slightly higher; levels of phosphorus, magnesium, copper and zinc were similar; and levels of potassium, calcium, and iron were slightly lower than the long-term average (1970-1980) for flue-cured tobacco grown on representative farms in Ontario.

A survey of farms in Ontario has been conducted annually since 1970 to obtain a yearly estimate of chemical composition and certain physical characteristics of flue-cured tobacco from various stalk positions. Of the original 32 farms, 21 are still included in the 1981 survey; there have been 13 representative farms added over the years; the last being replaced in 1978.

EXPERIMENTAL PROCEDURES

Cultural practices and selection of tobacco samples were described in Part 1 of the 1981 survey (2), which reported the levels of reducing sugars, total alkaloids, total nitrogen, chlorine, and lamina weight. Samples were prepared as described previously (1). A portion of the ground lamina was wet ashed in nitric acid for the determination of the nutrient elements. Phosphorus was determined by the method cited previously (1) and the other elements determined by atomic absorption spectroscopy. Levels of nutrient elements in the soil were determined by Dept. of Land Resource Science, University of Guelph, by the methods cited previously. (1)

Messers Elliot, Pocs and Beyaert are researchers at Agriculture Canada's Delhi Research Station.

TABLE I CHARACTERISTICS OF SOILS FROM 34 ONTARIO FARMS: FLUE-CURED TOBACCO SURVEY 1981

Character	Range	Normal Values[1]	Average	8-Year Average[2]
Phosphorus (P) ppm[3]	42 - 100+	76 - 100+	91	79
Potassium (K) ppm	68 - 232	113 - 177	145	167
Calcium (Ca) ppm	225 - 2000	304 - 1466	885	708
Magnesium (Mg) ppm	31 - 185	36 - 96	66	72
pH	5.7 - 7.4	5.0 - 6.4	5.7	6.2

[1] Normal Values — range of values representing 68.3% of the samples i.e. those within the the normal distribution curve.

[2] Analyses were not carried out in 1970, 1976, and 1979, therefore the average is calculated for the years 1971 - 1975, 1977, 1978 and 1980 inclusive.

[3] Parts per million.

RESULTS AND DISCUSSION

Levels of phosphorus and magnesium in the soil for 1981 were similar to the 1970-1980 averages, while the level of potassium and pH were slightly lower and levels of calcium were considerably higher than the long-term average (Table 1).

Levels of potassium, and iron tended to be slightly lower than the long-term average in the 10th growing leaf and all cured leaf positions. Levels of phosphorus and copper in the 10th leaf and all stalk positions were similar to the long-term average. Zinc levels were slightly higher than the long-term average for the 10th leaf and all cured leaf positions. Levels of calcium were slightly lower in the 10th leaf, sand leaves, cutter leaves and under-tip leaves, while the body leaves and tip leaves were similar to the long-term average. Magnesium levels in the 10th leaf, sand, body and under-tip leaves were similar to the long-term average, while the cutter and tip leaves were slightly higher than the averages. Levels of manganese were slightly lower in the 10th leaf and under-tip leaves, similar in the cutter and tip leaves and slightly higher in the sand and body leaves when compared to the long-term averages. Generally levels of all nutrient elements found in the under-tip leaves were similar to the levels in the tip leaves.

ACKNOWLEDGEMENTS

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TABLE II LEVELS OF SOME NUTRIENT ELEMENTS FOUND IN FLUE-CURED TOBACCO GROWN ON 34 ONTARIO FARMS

Character	Range	Normal Values[1]	Average	8-Year Average[2]
Phosphorus (P) %				
10th leaf	0.17 - 0.40	0.21 - 0.31	0.26	0.30[2]
sand leaves	0.18 - 0.34	0.22 - 0.30	0.26	0.25
cutter leaves	0.17 - 0.35	0.22 - 0.30	0.26	0.27
body leaves	0.18 - 0.42	0.23 - 0.33	0.28	0.29
under-tip leaves	0.22 - 0.38	0.25 - 0.35	0.30	0.33[3]
tip leaves	0.26 - 0.47	0.29 - 0.39	0.34	0.30
Potassium (K) %				
10th leaf	0.75 - 2.23	0.94 - 1.66	1.30	1.96
sand leaves	1.50 - 4.20	1.96 - 3.26	2.61	3.27
cutter leaves	1.31 - 3.38	1.74 - 2.82	2.28	2.97
body leaves	0.95 - 3.65	1.48 - 2.54	2.01	2.25
under-tip leaves	0.82 - 2.58	1.36 - 2.08	1.72	1.91
tip leaves	0.93 - 2.22	1.25 - 1.93	1.59	1.98
Calcium (Ca) %				
10th leaf	0.66 - 1.76	0.80 - 1.23	1.04	1.32
sand leaves	2.11 - 6.13	2.69 - 4.15	3.42	3.96
cutter leaves	0.86 - 4.63	1.80 - 3.32	2.56	2.85
body leaves	0.77 - 3.42	1.46 - 2.56	2.01	2.03
under-tip leaves	0.90 - 2.65	1.36 - 2.22	1.79	2.04
tip leaves	0.99 - 2.65	1.34 - 2.28	1.81	1.85
Magnesium (Mg) %				
10th leaf	0.15 - 0.66	0.23 - 0.49	0.36	0.36
sand leaves	0.46 - 1.32	0.70 - 1.14	0.92	0.94
cutter leaves	0.26 - 1.29	0.48 - 0.96	0.72	0.64
body leaves	0.13 - 0.99	0.28 - 0.58	0.43	0.41
under-tip leaves	0.20 - 0.97	0.30 - 0.60	0.45	0.47
tip leaves	0.35 - 1.05	0.40 - 0.66	0.53	0.42
Copper (Cu) ppm				
10th leaf	6.0 - 24.0	8.0 - 16.0	12.0	10.0
sand leaves	5.4 - 11.2	5.8 - 8.8	7.3	6.5
cutter leaves	3.0 - 8.0	3.6 - 6.0	4.8	5.8
body leaves	1.8 - 13.0	2.3 - 6.9	4.6	5.6
under-tip leaves	3.5 - 17.1	4.5 - 11.5	8.0	6.6
tip leaves	3.0 - 24.5	4.6 - 13.4	9.0	9.4
Iron (Fe) ppm				
10th leaf	75 - 232	85 - 151	118	179
cutter leaves	211 - 1027	324 - 722	523	634
body leaves	105 - 541	127 - 345	236	283
under-tip leaves	66 - 244	93 - 183	138	209
tip leaves	64 - 266	84 - 164	124	304

Character	Range	Normal Values[1]	Average	8-Year Average[2]
Manganese (Mn) ppm				
10th leaf	16 - 184	42 - 114	78	96
sand leaves	44 - 812	108 - 516	312	249
cutter leaves	22 - 428	95 - 297	196	188
body leaves	27 - 462	54 - 238	146	125
under-tip leaves	20 - 427	57 - 209	133	151
tip leaves	19 - 305	64 - 188	126	125
Zinc (Zn) ppm				
10th leaf	33 - 83	41 - 65	53	45
sand leaves	18 - 130	33 - 89	61	47
cutter leaves	16 - 87	26 - 64	45	41
body leaves	19 - 152	15 - 71	43	39
under-tip leaves	29 - 120	31 - 73	52	39
tip leaves	31 - 97	40 - 68	54	47

[1] Normal Values – range of values representing 68.3% of the samples i.e. – those within the normal distribution curve.

[2] 10th leaf analysis was not carried out in 1970, 1976, and 1979, therefore the average is calculated for the years 1971 - 1975, 1977 - 1978 and 1980.

[3] Analyses were not conducted on under-tip leaves prior to 1977 therefore the average is calculated for the years 1977 - 1978 and 1980.

REFERENCES

1) Elliot, J.M., Beyaert, R.P., and Pocs, R. 1982. A survey of flue-cured tobacco grown in Ontario in 1980. Part II: Soil characteristics, nutrient elements and smoke analysis. The Lighter 52(2): 14-18.

2) Elliot, J.M., Pocs, R., and Beyaert, R.P. 1982. A survey of flue-cured tobacco grown in Ontario in 1981. Part I: Sugars, alkaloids, nitrogen, chlorine and lamina weight. The Lighter 52(3): 25-27.

THE EFFECT OF HERBICIDES ON AGRONOMIC AND CHEMICAL CHARACTERISTICS OF FLUE-CURED TOBACCO IN ONTARIO IN 1981

B.F. ZILKEY and B.B. CAPELL

En 1981, on a évalué l'effet de différents traitements herbicides sur l'indice de catégorie, le rendement, l'indice de recettes ainsi que la teneur en alcaloïdes totaux et en sucres réducteurs du limbe du tabac jaune. Les herbicides recommandés pour la production, le difénamide et le pébulate, de même que les différents herbicides expérimentaux y compris les désherbants nouvellement introduits, Poast, Fusilade et Ro13-8895 ainsi que le diclofop-méthyl (incorporé en pré-semis) ont donné généralement des résultats agronomiques et chimiques semblables au témoin non traité. Par contre, le rendement et l'indice de recettes donnés par le MBR 20457 et le MBR 22359, tous deux incorporés en pré-semis ou appliqués deux fois en pré-levée la première année, n'étaient pas acceptables. On a observé des symptômes de phytotoxicité au repiquage dans le cas de ces deux herbicides expérimentaux.

INTRODUCTION

The increasing use of herbicides to control annual weeds in flue-cured tobacco production necessitates continued and expanding research with these agricultural chemicals to improve our understanding of their effects on agronomic yield and quality. Studies have been conducted in Ontario recently (1,3,4,5,6,7,8) using numerous herbicides to examine their utility for weed control and effects on tobacco growth, yield, grade and smoke quality.

EXPERIMENTAL PROCEDURES

In trials at the Delhi Research Station in 1981, pretransplant incorporated (PPI) herbicides treatments were applied with a bicycle-wheeled sprayer at 225 l/ha at 138 kPa, while pre- and post-emergence treatments were applied at 450 l/ha at 276 kPa (Table 1). PPI treatments were immediately incorporated with a spring-tooth harrow in two directions at right angles. Pre-emergence (PRE 1 and PRE 2) and post-emergence (POST) treatments were sprayed in a 25-cm band over the row. Row fumigation with Vorlex at 40 l/ha was conducted on May 13. Treatments were replicated four times in a randomized block design. Each plot was 3.15 m by 12 m and consisted of three rows spaced 1.05 m apart with a plant to plant spacing within each row of 0.3 m. The variety, Delhi 76, was transplanted May 26. The plots were cultivated and hoed to prevent weed competition. The centre row of each plot was harvested and cured. Otherwise, normal cultural practices were followed.

Chemical analyses for total alkaloids and reducing sugars were conducted as described previously (8).

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TABLE 1. HERBICIDE APPLICATION INFORMATION

Treatments	Rate (active) kg/ha	Method of application
1. Diclofop-methyl	1.00	PPI, May 8
2. Pebulate	6.00	PPI, May 8
3. MBR20457	3.36	PPI, May 8
4. MBR22359	3.36	PPI, May 8
5. Pebulate; napropamide	6.00; 1.00	PPI, May 8; PRE 2, May 27
6. Glyphosate	1.00	PRE 1, May 21
7. Napropamide	1.00	PRE 2, May 27
8. Napropamide	2.00	PRE 2, May 27
9. Diphenamid	6.75	PRE 2, May 27
10. MBR20457	2.24	PRE 2, May 27
11. MBR22349	2.24	PRE 2, May 27
12. Diphenamid; diclofop-methyl	6.75; 1.00	PRE 2, May 27; POST June 17
13. Napropamide + ripcord	2.00 + 0.07	PRE 2, May 27
14. Napropamide + orthene	2.00 + 1.12	PRE 2, May 27
15. Napropamide + ambush	2.00 + 0.07	PRE 2, May 27
16. Ro13-8895 + Agral 90	0.125 + 0.56%	POST, June 17
17. Ro13-8895 + Agral 90	0.25 + 0.56%	POST, June 17
18. Ro13-8894 + Agral 90	0.50 + 0.56%	POST, June 17
19. Poast + Assist	0.15 + 1.0%	POST, June 17
20. Poast + Assist	0.30 + 1.0%	POST, June 17
21. Poast + Assist	0.60 + 1.0%	POST, June 17
22. Fusilade + Agral 90	0.20 + 0.1%	POST, June 17
23. Fusilade + Agral 90	0.30 + 0.1%	POST, June 17
24. Fusilade + Agral 90	0.40 + 0.1%	POST, June 17
25. Check	–	–
26. Check	–	–

PPI — Pre-plant incorporated
PRE 1 — pre-emergence to weeds, sprayed in a 25-cm band pre-transplant
PRE 2 — Pre-emergence to weeds, sprayed in a 25-cm band post-transplant
POST — Post-emergence to weeds, sprayed in a 25-cm band when annual grass at 1-3 leaf stage.

RESULTS AND DISCUSSION

Acceptable grade index, yield and return index results were obtained for the recommended (2) herbicides, pebulate and diphenamid (Table 2). The pre-transplant and post-transplant period until late June was warm and dry. Usually this period has to be at least fairly moist for the best control of weeds with these two herbicides. Napropamide, a promising experimental herbicide, performed well agronomically, especially at the 2 kg/ha rate, as well as in combination with pebulate. This result in 1981 contrasts with poor results obtained in 1980 (8) and cannot be explained on the basis of rainfall differences for the two years.

The agronomic results for diclofop-methyl, diphenamid + diclofop-methyl, glyphosate, napropamide combined with the insecticides ripcord, ambush, and orthene, and the three annual grass control chemicals, Ro 13-8895, poast and fusilade at all tested rates were also quite acceptable (Table 2). This is the second

TABLE 2. EFFECT OF HERBICIDES ON AGRONOMIC AND CHEMICAL CHARACTERISTICS OF FLUE-CURED TOBACCO

Treatments	Grade† index $/kg	Yield† kg/ha	Return† index $/ha	Total* Alkaloids %	Reducing* Sugars %
1. Diclofop-methyl	3.45a	3175a	10,948a	2.85	21.2
2. Pebulate	3.39a	3061ab	10,373abc	2.71	23.7
3. MBR20457	3.30b	2142d	7,096d	2.42	20.3
4. MBR22359	3.39a	2630bc	8,942bc	2.70	20.2
5. Pebulate; napropamide	3.43a	3199a	10,975a	2.82	23.2
6. Glyphosate	3.40a	3112ab	10,587ab	2.89	22.6
7. Napropamide	3.43a	3110ab	10,653ab	2.83	22.5
8. Napropamide	3.45a	3160a	10,907a	2.84	21.8
9. Diphenamid	3.43a	3073ab	10,548ab	2.59	23.8
10. MBR20457	3.41a	2543cd	8,683c	2.58	21.8
11. MBR22349	3.42a	2850abc	9,757abc	2.78	20.7
12. Diphenamid; diclofop-methyl	3.43a	3033ab	10,412abc	2.69	21.5
13. Napropamide + ripcord	3.41a	3115ab	10,631ab	2.70	23.2
14. Napropamide + orthene	3.43a	3139ab	10,757ab	2.76	22.5
15. Napropamide + ambush	3.42a	3158a	10,811a	2.82	22.1
16. Ro13-8895 + Agral 90	3.46a	3049ab	10,555ab	2.87	21.1
17. Ro13-8895 + Agral 90	3.41a	3056ab	10,426abc	2.71	23.3
18. Ro13-8895 + Agral 90	3.44a	3000abc	10,307abc	2.79	22.0
19. Poast + Assist	3.46a	3010abc	10,399abc	2.87	22.8
20. Poast + Assist	3.43a	3228a	11,670a	2.76	22.7
21. Poast + Assist	3.45a	3118ab	10,755ab	2.62	22.8
22. Fusilade + Agral 90	3.43a	3071ab	10,540ab	2.82	23.6
23. Fusilade + Agral 90	3.46a	3062ab	10,588ab	2.86	22.1
24. Fusilade + Agral 90	3.46a	3131ab	10,822a	2.77	22.9
25. Check	3.44a	3234a	11,133a	2.82	22.1
26. Check	3.42a	3136ab	10,710ab	2.80	22.6
F value	2.29	4.43	4.49	—	—

†Means followed by the same letter are not significantly different at the 1% level as determined by Duncan's multiple range test.

* F test not significant for these data.

year that excellent agronomic results have been obtained for diclofop-methyl, PPI and the annual grass control experimental herbicides (8).

Unacceptable results, especially yield and return index, were recorded for MBR 20457 and MBR 22359, both PPI and PRE 2. At the rates used, these experimental herbicides produced visible symptoms of transplant stunting, leaf distortion and growing point injury about 1 week after application.

All herbicides tested did not significantly alter the important chemical quality content indicators, total alkaloid and reducing sugars. This finding is consistent for herbicides tested in 1980 (8), but contrasts with results obtained in 1979 (5).

In summary, various herbicide treatments were evaluated in 1981 for their effect on flue-cured tobacco grade index, yield, return index and lamina total alkaloid and reducing sugar content. Herbicides recommended for production, diphenamid and pebulate, and various experimental herbicides including the newly introduced annual grass control chemicals, poast, fusilade and Ro13-8895, and diclofop-methyl (PPI) generally provided agronomic and chemical results similar to the untreated check. MBR 20457 and MBR 22359 yield and return index results, tested both PPI and PRE 2 for the first year, were not acceptable. Transplant phyto-toxicity symptoms were observed for both of these experimental herbicides.

REFERENCES

1. Hamill, A.S. and T.W. Welacky. 1981. Weed control in burley tobacco. Res. RPP., Expert Comm. Weeds, East Can. Sect. P. 113.
2. Ontario Herbicide Committee. 1982 Tobacco Production Recommendations. Ont. Min. of Agr. and Food. Publ. 298. Toronto, Ontario. P. 11.
3. Zilkey, B.F. 1980. Annual weed control in flue-cured tobacco. Res. RPP., Expert Comm. Weeds, East Can. Sect. P. 104.
4. Zilkey, B.F. 1980. The effect of herbicides on flue-cured tobacco in Ontario in 1978. The Lighter 50(4): 23-25.
5. Zilkey, B.F. 1981. The effect of herbicides on flue-cured tobacco in Ontario in 1979. The Lighter 51(3): 14-16.
6. Zilkey, B.F., and B.B. Capell. 1981. Annual grass control flue-cured tobacco. Res. RPP., Expert Comm. Weeds, East Can. Sect. P. 114.
7. Zilkey, B.F., and B.B. Capell. 1981. Annual weed control in flue-cured tobacco. Res. RPP., Expert Comm. Weeds, East Can. Sect. P. 115.
8. Zilkey, B.F. and B.B. Capell. 1982. The effect of herbicides on agronomic and chemical characteristics of flue-cured tobacco in Ontario in 1980. The Lighter 52(3): 21-24.

TOBACCO IN THE WORLD ECONOMY

Excerpts from "The Economic Significance of Tobacco" published by the Food and Agriculture Organization of the United Nations, Rome 1983

INTRODUCTION

Certain features of the world tobacco economy make it unique among markets for agricultural commodities. Firstly, the smoking of tobacco — especially in the form of cigarettes — is attended by a number of well known health hazards, yet demand for cigarettes continues upward, and world consumption of tobacco leaf has only recently begun to level off. Secondly, production, trade and consumption of both tobacco and tobacco products are subject to government regulation in nearly all countries: the measures used include control of plantings; production quotas; guaranteed prices, incentive payments and subsidies; export and import duties; internal taxes on wholesale and retail sales; state and leased monopolies for the manufacture and sale of tobacco products; state trading in tobacco and tobacco manufactures; and, particularly in developed countries, limitations on advertising and restrictions on smoking in public. Finally, the undoubted economic and social benefits accruing to those engaged in the cultivation and manufacture of tobacco and in the marketing of tobacco and tobacco products, as well as to their governments, must be weighed against the social and economic costs deriving from the health risks attached to tobacco smoking, and taking the form of additional health care facilities, increased social security payments and lower productivity among the working population.

DEMAND FOR TOBACCO

The great bulk of the tobacco currently consumed in the world goes into cigarettes, which have gradually increased their share of the market from less than 70 percent in the sixties to 85 percent by 1980. The remainder is utilised in cigars and cheroots, smoking tobacco for pipes and hand-rolled cigarettes, chewing tobacco and snuff. World consumption of cigarettes currently exceeds 4-1/2 billion pieces each year, but growth in demand has slowed down from some 3-5 percent per annum in the sixties and early seventies to less than 2 percent annually in 1976-80. In recent years, most of the increase has taken place in the developing countries, where the data reflect a shift from home-made to factory-produced cigarettes, as well as an expansion in overall consumption following rapid population growth, urbanization and rising incomes. In the developed countries, on the other hand, cigarette consumption has begun to level off under the combined impact of anti-smoking campaigns, increased taxation, higher retail prices, the erosion of incomes by inflation, and slower population growth. The pattern of consumption has also changed as smokers have turned increasingly to filter-tipped cigarettes (which currently account for 70 to 95 percent of cigarette output in the vast majority of producing countries) and to low-tar and low-nicotine brands requiring a larger proportion of burley to retain flavour. The milder American-type

blends made from a combination of various light and oriental tobaccos have gained ground in most countries at the expense of dark cigarettes and pure oriental brands, while demand for English types made entirely from flue-cured has remained largely unaffected.

World production of cigarettes gradually increased from 4.29 billion pieces in 1976 to 4.67 billion pieces in 1980, developing countries raising their output by almost 4 percent annually from 1.81 billion to 2.07 billion pieces while the developed countries increased production by less than 1.5 percent annually from 2.48 billion to 2.60 billion pieces. Throughout the five years more than half of the world's cigarette supplies originated in only four countries — China, the United States, the U.S.S.R. and Japan — with widely differing production trends. Whereas output increased very rapidly in China, it rose only moderately in the United States, remained stationary in Japan, and declined in the U.S.S.R. Other major producing countries where output levelled off or declined included the United Kingdom, Canada, Italy, Greece, Belgium and France. Among the developed countries, only Poland, Spain and Yugoslavia raised output for domestic consumption: increases in the Federal Republic of Germany, the Netherlands and Bulgaria were in response to rising export demand. In most of the developing countries, on the other hand, cigarette production for the domestic market expanded rapidly, with particularly steep increases in Brazil, India and Indonesia; only Turkey curtailed production in the face of inroads into its market from imported American-type blends.

The volume of tobacco utilized in the manufacture of cigarettes increased only half as fast as cigarette production, due to a rapid reduction in the amount of leaf required for each cigarette. This was the result not only of greater use of filters, but also of improved technologies for leaf extension and homogenization and for the utilization of stems, as well as of the introduction of slower-burning cigarettes. The average quantity of leaf used for every 1000 cigarettes produced declined from 1.24 kg in the early seventies to 1.19 kg in 1974-79 and 1.12 kg in 1980. In the United States, leaf usage per 1000 cigarettes gradually fell from around 1.15 kg in the early seventies to 1.08 kg in 1974-76, to 0.93 kg in 1977-79 and to 0.91 kg in 1980. Since consumption of cigars pipe tobacco and hand-rolled cigarettes contracted steadily throughout the seventies as smokers switched to branded cigarettes, growth in overall demand for unmanufactured tobacco began to slow down. For the five years from 1976 to 1981, estimates of world consumption indicate an average growth rate of rather less than 1 percent per annum, from 5.19 to 5.47 million tons, dry weight.

TOBACCO CULTIVATION

Tobacco is probably the most widely grown among the non-food crops, being produced in about 120 countries and territories, yet it occupies a mere 0.3 percent of the world's arable land, compared with 0.7 percent for coffee and more than 2 percent for cotton. The proportions of total arable land devoted to these three crops, and to four of the principal food crops, show that the tobacco area is less than half as large as the area under coffee, and occupies only one-eight of the area under cotton, one-thirteenth of the area under maize, and less than one-fifty-fifth of the area under wheat. Moreover, tobacco is frequently grown in rotation with

crops such as wheat, maize, rice, groundnuts, or other oilseeds, as well as with grass and clover, not only in developed but also in many developing countries, including India. Where tobacco is grown on the same land year after year, as it is in Greece, Turkey, Malawi and Zimbabwe, the soil is generally unsuitable for most other crops.

The five principal tobacco producing countries are the People's Republic of China with a crop of about 1.4 million tons, the United States with around 900 000 tons, India with 450 000 tons, and Brazil and the U.S.S.R. with some 300 000 to 350 000 tons per annum. With the accession of Greece, the EEC has become the sixth largest producing area, growing almost 300 000 tons of leaf annually, followed by Turkey with an average crop of 200 000 to 250 000 tons. Other important producers include Japan, Bulgaria, Canada, the Republic of Korea and Zimbabwe.

Tobacco cultivation expanded rapidly from the early sixties until the mid-seventies, chiefly in the developing countries where labour was abundant, production costs were generally lower than in the industrialized regions, and cash crops other than tobacco were fewer. By 1976, the total area under tobacco exceeded 4.8 million hectares, and the world crop reached 6.0 million tons. Between 1976 and 1980, however, plantings contracted, mainly because the levelling-off in demand slowed the rise in tobacco prices while prices of agricultural inputs continued to increase rapidly. The cost/price squeeze affected farmers in the developing as well as in the developed countries, and world production of tobacco leaf passed its peak after 1978. In 1979-81, the total area under tobacco averaged some 4.3 million hectares – of which 72 percent was in developing countries – and yielded around 5.7 million tons of leaf annually. The developing countries accounted for 63 percent of world production, compared with 58 percent in 1972-74 and only 50 percent in 1961-63.

Employment on tobacco farms: Tobacco is an important source of employment and cash income in all the countries where it is grown. In most developing countries, production tends to be concentrated on very small holdings and the crop provides a livelihood not only for the growers, but also for unknown numbers of family members and other workers. Thus, Zimbabwe's tobacco industry is the nation's largest employer of labour, supporting 17 000 tobacco farmers who are also able to supply 35 percent of the maize, 30 percent of the peanuts, 21 percent of the beef and 17 percent of the winter wheat produced in the country. In Malawi, 100 000 families rely on cash income from tobacco, and in Tanzania, tobacco cultivation generates the income of about 370 000 people, or 2 percent of the population. In the south of Brazil tobacco farmers number about 115 000 and a further 650 000 people are directly dependent on tobacco; in the Indian State of Andhra Pradesh, tobacco provides a living for 75 000 farmers and about 2 million other workers engaged in curing, packing and processing. Even in the developed countries, where mechanization has made considerable headway, tobacco generates employment on a large scale. In the United States, for example, half a million farm families are directly involved in tobacco cultivation, which also requires many thousands of seasonal workers; in Greece, the number of tobacco growers exceeds 200 000 and a further 50 000 workers are employed on tobacco farms.

Tobacco's contribution to agricultural income: Even in countries where aggregate cash receipts from tobacco are relatively small, their contribution to total agricultural incomes can be considerable. Thus, tobacco brings in almost a quarter of total agricultural income in Zimbabwe, where it earns twice as much cash as sugar, five times as much as cotton, and ten times as much as maize. In Malawi, receipts from tobacco represent about 8 percent of the total cash income of farmers: they are three times higher than those from tea, five times higher than those from sugar, and ten times higher than those from groundnuts, Greek farmers also derive more cash from tobacco than from any other crop, but obtain almost as much from raisins and other processed fruits such as figs; tobacco accounts for about 6 percent of total agricultural incomes, compared with 5 percent for raisins and 4 percent for other processed fruits. In the United States and Canada, where cash receipts from tobacco represent some 2 to 3 percent of total gross income from all farm commodities, tobacco is one of the most valuable crops produced, ranking eighth in the United States – after soybeans, maize, wheat, fresh vegetables, cotton, deciduous fruit and hothouse produce – and fifth in Canada – after wheat, barley, rapeseed and vegetables; its small contribution to overall agricultural receipts in these two countries reflects the large proportion of the total which North American farmers derive from livestock products. In Japan, tobacco shares fourth place with cabbage, after rice, tangerines and other vegetables; it ranks seventh in Yugoslavia, eighth in the Republic of Korea, and ninth in Thailand and Turkey.

Export earnings from tobacco leaf: Roughly one-quarter of the world's tobacco crop enters international trade in the unmanufactured state. The volume of world exports, like the volume of production, expanded rapidly until the mid-seventies but appears to have stabilized at around 1.4 - 1.5 million tons per annum in more recent years. Their value, which averaged some U.S. $3 800 million in 1976-78, rose to U.S. $4 100 million in 1980 and to an estimated U.S. $4 400 - 4 500 million in 1981. Although tobacco leaf is exported from a large number of countries, almost 60 percent of the total shipped originates in only nine of them, namely, the United States, Brazil, Turkey, India, Zimbabwe, Greece, Bulgaria, Malawi and Italy. Due to the generally high quality of the leaf which they ship, these countries account for more than 70 percent of world exports by value. The United States remains by far the most important exporter of unmanufactured tobacco, but its share of the world market has declined from 25 percent in the early sixties to 20 percent in the mid-seventies and 19 percent in 1979-81. At the same time, the United States has imported increasing quantities of the oriental leaf and low quality filler needed to meet the growing demand for mild blended cigarettes, so that it has also become the world's largest single importer.

The trend towards blended cigarettes has also created a growing import demand for oriental leaf, burley and low-cost flue-cured in other developed countries, notably in the EEC and Japan, in the U.S.S.R., and eastern Europe, and in some developing countries, particularly in the Far East. This has stimulated exports from the developing countries which have a comparative advantage in the production of these types, and which accordingly raised their share of the world market from 48 percent in the late sixties and early seventies to 51 percent by the mid-seventies and 53 percent in 1979-81. Exports from Brazil and certain other Latin American

countries more than doubled between 1970 and 1980, and those from India increased by 50 percent. Shipments from Zimbabwe nearly doubled despite the trade sanctions imposed upon that country in 1966 (and not lifted until the achievement of independence in November 1979) while those from its closest competitor, Malawi, almost trebled. Marked increases in exports were also achieved by Thailand, the Republic of Korea, Tanzania and Zambia, but shipments from Turkey, after reaching a peak in 1973-75, stabilized at a lower level, and those from the Philippines stagnated. Exports from developed countries specializing in oriental leaf, such as Greece and Bulgaria, also showed little change, but shipments of burley from Italy expanded thanks to the support received under the EEC common agricultural policy for tobacco, which also gave Italian leaf free access to the Community's markets.

Due to the predominance of low-cost, low-quality tobacco in the exports of developing countries, their aggregate foreign exchange earnings from this source averaged only U.S. $1 600 million in 1979-81, compared with U.S. $2 400 million for the developed countries. Nevertheless, exports of tobacco play an important part in the agricultural economies of many developing countries which depend on them for a significant proportion of total foreign exchange earnings. Thus, tobacco is the leading export commodity in Malawi and Zimbabwe, where it accounts for over one-half and over one-third of agricultural export earnings, respectively. In Turkey and the Republic of Korea, tobacco leaf is also one of the principal exports, bringing in around 15 percent of total agricultural export earnings. Other developing countries where tobacco is a significant earner of foreign exchange include the Dominican Republic (8 percent of total agricultural exports), India (7 percent), Tanzania (6 percent), Paraguay (5 percent) and Brazil (4 percent). As regards the developed countries, tobacco makes substantial contributions to the foreign exchange earnings of oriental leaf exporters such as Greece and Bulgaria, which derive 15 percent of their agricultural export earnings from it, and Yugoslavia, which derives 5 to 10 percent from it. Finally, tobacco exported from the United States earns between U.S. $1 000 - 1 500 million annually, and contributes between 3 and 4 percent to total foreign exchange earnings from agricultural commodities.

TOBACCO MANUFACTURING

The manufacturing of tobacco in both developed and developing countries is undertaken by a small number of large enterprises which do not compete with each other on price.[1] About 37.5 percent of the world's cigarette output is produced by the state controlled tobacco industries of centrally planned countries, which operate within the framework of national economic plans, and a further 17.5 percent is manufactured by the tobacco monopolies established in a number of countries with market economies – foremost among them Japan, France, Italy, the Republic of Korea and Turkey – whose principal aim is to maximise government revenue. The remaining 45 percent of the world market is dominated by seven international conglomerates in which tobacco is still a leading interest, although its importance is rapidly diminishing with the original companies' diversification into other fields.

[1] This lack of competition is due chiefly to the high incidence of excise taxes, which minimise the effect of any change in manufacturers' prices on the level of retail prices, particularly for cigarettes.

The largest of these conglomerates is the British-American Tobacco Company (BAT), with 119 factories in 52 countries and worldwide sales of U.S. $9 200 million in 1978, when its profits totalled U.S. $640 million. The next largest are Philip Morris, R.J. Reynolds, and Rothmans International: of these, R.J. Reynolds employed over 37 000 people in 1978, when its global sales totalled U.S. $6 600 million and its profits were U.S. $440 million, Imperial Tobacco and American Brands (United States) operate on a much smaller scale; American Brands (United Kingdom) is not much larger than some independent national companies. Between them, these seven conglomerates control 38 percent of world cigarette production, and since most of them also have licensing agreements with the U.S.S.R. and other centrally planned countries of eastern Europe, as well as with the state monopolies of western European and developing countries, they own an even higher proportion of the world's brands.

Employment and income generated: The scale of operations of tobacco manufacturing industries, and their contribution to employment and national income indicates that the number of employees may run to hundreds of thousands in certain developing countries such as India and Indonesia where manual methods of production are still the rule, but that the labour force of fully mechanized industries ranges from 35 000-60 000 in the principal manufacturing countries, and from 15 000-20 000 in countries with medium-sized establishments, including the Republic of Korea and the Philippines. Nevertheless, the aggregate income of India's 300 000 tobacco workers, whose productivity is very low, was only U.S. $72 million in 1977; this was the same as the income of the 7 000 workers employed in the tobacco industry of Belgium. The total wages paid to the 150 000 workers engaged in tobacco manufacturing in Indonesia amounted to only U.S. $43 million in 1978; this was not much higher than the total earned by the 20 000 workers employed by Bulgarian factories or the 15 000 workers in the tobacco industry of the Republic of Korea. By contrast, the total wages and salaries paid by the technically advanced tobacco manufacturing industries in 1979 exceeded U.S. $800 million in the United States and Japan, approached U.S. $400 million in the Federal Republic of Germany and U.S. $300 million in the United Kingdom, and ranged from U.S. $100-150 million in Canada, the Netherlands, Italy and Belgium.

Export earnings from tobacco manufactures: Due to the predominance of large state-controlled concerns and multinational corporations with a network of affiliates and licensing agreements, the great bulk of the world's output of tobacco manufactures is produced for domestic markets. Less than 10 percent enters international trade, so that the aggregate value of exports is some 25 percent smaller than the value of world exports of unmanufactured leaf: in 1979-81, world exports of tobacco manufactures averaged less than U.S. $3 500 million per annum, compared with U.S. $4 600 million for exports of tobacco leaf. Moreover, only a very small share of the total accrues to the developing countries, and even this has diminished in recent years as a result of rapidly expanding shipments – chiefly of cigarettes – from the United States, the United Kingdom and the Netherlands. In 1976-78, the developing countries accounted for almost 9 percent of world exports by value; in 1979-81, this proportion had fallen below 6 percent. The only developing country whose export earnings from tobacco products exceeded U.S. $50 million was Cuba, followed by India with U.S. $10 million. Developed exporting countries achieved far higher earnings from exports of tobacco products: those of

the EEC exceeded U.S. $2 150 million per annum in 1979-81, U.S. $636 million accruing to the United Kingdom and U.S. $573 million to the Netherlands, while those of the United States averaged U.S. $1 065 million. In none of the exporting countries, however, did tobacco products account for more than 1 percent of total merchandise exports, and in only four of them – the Netherlands, Cuba, Zimbabwe and the United Kingdom – did it represent between 0.5 - 1.0 percent. Two countries – the United States and Switzerland – obtained 0.5 percent of their export earnings from tobacco manufactures, but in all the others the contribution of tobacco products was 0.3 percent or less. Those sections of the tobacco manufacturing industry which depend largely on export sales, and those engaged in the marketing and distribution of the products exported, nevertheless derived a considerable part of their income from this trade.

Tax revenue from tobacco products: Tobacco products are an important source of fiscal revenue for central and local governments in both developed and developing countries. In addition to customs duties on imports or exports, internal taxes are frequently levied on all tobacco products marketed, and the proceeds from sales by state tobacco monopolies are usually remitted to the appropriate internal revenue offices. Unlike many other forms of taxation, excise duties on tobacco tend to be accepted as equitable; they are also relatively easy to administer and due to the inelastic nature of demand for most tobacco products, they can yield considerable revenues, despite the incentives to tax evasion through smuggling and theft. In a number of countries, tobacco taxes account for a significant proportion of total government revenue: thus in India, duties on manufactured tobacco represent some 11 to 12 percent of total tax receipts from Union Excise Duties. In the Republic of Korea, remittances to the Government by the tobacco monopoly totalled U.S. $583 million in 1978, U.S. $615 million in 1979, and U.S. $761 million in 1980. The Turkish tobacco monopoly pays 55 percent of its gross receipts to the Government in the form of production tax.

Even in the developed countries, the contribution of tobacco taxes to government revenue is far from insignificant. In Greece, the excise tax on tobacco yields about 4 percent of total government revenue. Receipts from tobacco taxes represent between 2 and 8 percent of total revenue from all taxes (including those on income and corporate profits) in the other countries of the European Economic Community, about 3 percent in Sweden, Australia and Canada, and about 1 percent in the United States. Revenue from tobacco taxes in the Federal Republic of Germany alone totalled DM9 380 million (U.S. $3 725 million) in 1976, DM9 796 million (U.S. $4 219 million) in 1977 and DM10 576 million (U.S. $5 265 million) in 1978. In Australia, Federal excise duty paid on tobacco products totalled $703 million (U.S. $784 million) in 1979-80. This did not include State revenue from turnover taxes levied in South Wales, South Australia, Victoria Western Australia. The Canadian Federal Government collected Can $1 100 million (U.S. $940 million) in excise and sales taxes on tobacco in 1979-80; provincial governments collected a further Can $710 million (U.S. $606 million). In the United States, revenue from the taxation of tobacco products by Federal, State and local governments exceeded U.S. $6 500 million in both 1980 and 1981. These amounts represented some 13 percent of all excise tax receipts.

CONCLUSIONS

The cultivation and manufacture of tobacco result in a number of immediate and tangible social and economic benefits, particularly in the poorer producing countries. Tobacco-growing generates large-scale rural employment in over-populated areas and provides a ready source of cash for smallholders who would otherwise be dependent on less remunerative crops or on subsistence farming. In nearly every producing country, tobacco is one of the most valuable crops grown, and its contribution to total agricultural income is almost invariably significant, reaching 25 percent in the case of Zimbabwe. Tobacco is also one of the most remunerative cash crops, yielding net returns per unit of land which may be several times higher than those obtained from industrial crops or staple foodstuffs. In addition, tobacco leaf is an important source of foreign exchange for exporting countries. The value of world exports in 1979-81 averaged U.S. $4 000 million, of which about U.S. $1 600 million accrued to developing countries, and tobacco makes a substantial contribution to the agricultural export earnings of many individual countries, especially in Africa and Asia.

Tobacco manufacturing creates extensive employment opportunities, particularly in developing countries where manual methods of production are still the rule, so that the labour force may run into hundreds of thousands. The wages and salaries paid by tobacco factories compare favourably with those paid by other industries employing workers with similar skills; the value added by processing contributes some 3 to 5 percent to net industrial output in most developing countries, and about 1 percent in the developed countries. World exports of tobacco products were valued at U.S. $3 500 million annually in 1979-81, and though only 6 percent of this total accrued to developing countries, some of them – such as Cuba and India – earned sizeable amounts of foreign exchange from this trade. Finally, tobacco products are a very important and easily tapped source of tax revenue for governments in both developing and developed countries; thus they contribute between 11 and 12 percent to total excise tax receipts in India, and between 2 and 8 percent to receipts from all taxes (including those on income and corporate profits) in the countries of the European Economic Community. In view of these factors, farmers continue to have strong incentives to produce tobacco, and governments to encourage its cultivation and manufacture. Until world demand – which was still rising in 1977-80 – can be curbed sufficiently to make tobacco less profitable, it will be very difficult to induce growers to curtail production.

WORLD TOBACCO NEWS

Compiled by
N.L. LONGMUIR

MALAWI

Malawi's 1983 tobacco crop estimate has been lowered to 64 935 t, 7% below the June estimate. This is almost one-third larger than last year's crop. Revised estimates – in tonnes – for each leaf type, with June estimates in parentheses, are as follows: flue-cured – 20 475 (21 600); burley – 39 600 (43 200); fire-cured – 8370 (8550); dark air/sun-cured – 720 (1080); and oriental – 270 (540). The 1983 revised tobacco area estimates included flue-cured at 13 889 ha and burley at 40 065 ha – both up slightly from June estimates. Although revised downward, the burley crop remains a record.

Source: USDA WR 32-83

GREECE

Oriental seedbeds were good with transplanting posing limited problems. After a dry June, rain fell for the next month and a half; the plants developed too rapidly resulting in irregular and oversized leaf. Blue mold and Mosaic diseases infested the overgrown lower leaves rapidly and most farmers abandoned these fields. Yields in 1983 could be equal to 1982 levels and the 5 to 15% increase in area could help production stabilize.

Source: Standard Group of Tobacco Companies

SOUTH KOREA

The 1983 flue-cured crop is forecast at 63 000 t down 28% from the 1982 level of 80 500 t. Exports are likely to remain steady at about 23 000 t. The crop was harvested between July 1 and August 15, 1983, and overall appears to be a good quality crop.

THAILAND

The 1983 crop was about 52 000 t and was larger than expected, especially when the price for the 1982 crop was not encouraging.

Seedbed preparation for the 1984 crop commenced in June/July with favorable weather conditions. The plants were healthy for transplanting, but area planted will be down as growers are well aware of the large 1983 crop.

Mr. Longmuir is an economist with Agriculture Canada's Marketing and Economics Branch in Ottawa.

ZIMBABWE

The 1983 crop is about 96 200 t with some very heavy leaf resulting in a yield increase. As a result of the drought, there was some variation in quality and growers watched the auction prices with interest.

SPAIN

In Spain, the Ministry of Agriculture issued regulations on May 30 for the 1983-84 tobacco marketing year. Production allocations (tonnage basis) allow for a 16% boost in production from the amount harvested in 1982. The new regulations are designed to continue the trend of increasing production of flue-cured tobacco. The average grower price schedule contained in the 1983-84 marketing regulations has increases for all leaf types ranging from a 7% hike for burley tobacco leaf to an 11% price increase for flue-cured tobacco. Burley tobacco output is estimated to account for nearly 84% of total tobacco production.

USDA currently estimates 1983 Spanish tobacco production at 42 075 tons (farm sales weight), down 4% from last year. Minor irrigation water supply problems are now expected as a result of drought conditions in the key producing areas of Caceres and Granada provinces, which account for about 85 - 90% of all tobacco produced in Spain.

Source: USDA WR 28-83, July 13

JAPAN

The R.J. Reynolds Tobacco Company in its July 1983 Newsline "Pride in Tobacco" indicated that tobacco growers' profits would increase if Japan bought U.S. cigarettes in preference to leaf tobacco. A recent study by the Tobacco Merchants Association (TMA) concludes that an open market for American cigarettes in Japan would reap substantial profits for American tobacco growers, even though leaf sales to Japan would decline. Assuming a 20% market share between 1972 and 1981 a net gain of 307 000 t (675 million pounds) of leaf tobacco could have been saved worth a billion dollars. Hence the extra profits attributed to the merchants could have been shared by the growers. These estimates are considered to be "conservative" as they neglect to include other factors such as energy conservation, lower input needs and more competition in the Japanese market for further expand tobacco demands.

CANADA

CANAGREX is a government-owned agricultural export corporation designed to help increase sales of Canadian agricultural products abroad. It will provide market information, promote and arrange loans and guarantees, and help promote joint ventures in cooperation with Canadian business firms, marketing boards or cooperatives and on a government-to-government basis when necessary.

UNITED STATES

USDA Approved Tobacco Rebate Program — USDA recently approved a tobacco rebate program that authorized the Flue-Cured Tobacco Cooperative Stabilization Corporation (FCTCSC) to use No-Net-Cost program funds to offer a rebate of up to 30 cents per pound on a portion of the 1983 flue-cured tobacco crop. The plan was developed by the FCTCSC and is officially known as the "Buyers Incentive Purchase Program for 1983 Flue-Cured Tobacco".

The plan becomes operative when purchases from the 1983 crop exceed the 1982 purchase level of 734 million pounds. After this purchase condition is met, individual buyers will receive a rebate on all purchases exceeding their average annual purchases for the past 3 years. In order for individual buyers to receive the full 30 cents per pound rebate, all buyers must equal or exceed their 3-year average purchases; otherwise, rebates to individual buyers who qualify will be factored downward.

The rebates will be made at the end of the marketing year upon receipt of proper certification as to the amount of tobacco purchased. The plan is designed to provide an incentive for buyers to purchase additional quantities of tobacco from the 1983 crop over and above recent years' purchases. This in turn would reduce the volume of leaf from the 1983 crop consigned to the FCTCSC.

It is estimated that 160 million pounds of tobacco could be eligible for the rebate. If the entire 1983 marketing quota of 892 million pounds is sold to trade, rebates would total $48 million.

The No-Net-Cost fund is supported by a 7-cents-per-pound assessment on growers and allotment holders. The fund was part of the No-Net-Cost Tobacco Program legislation enacted in 1982 that requires the tobacco price support program to be run at no cost to the government.

USDA Announces 1983 Tobacco Price Support Levels — On August 2, 1983, the U.S. Department of Agriculture issued a 1983 price support levels statements for eight kinds of tobacco, unchanged from 1982 levels. According to USDA's Agricultural Stabilization and Conservation Service, support levels for all tobacco will be unchanged from 1982 levels, as required by the Tobacco Price Support Stabilization Act of 1983, signed July 25 by President Reagan. The law also provides that price supports be made available for those kinds of tobacco for which producers have approved marketing quotas. The levels for the eight 1983-crop tobaccos are as follows:

Kind	1983 Average Support Level
Burley	$1.751
Dark air-cured (types 35 - 36)	$1.057
Fire-cured (type 21)	$1.188
Fire-cured (Types 22 - 23)	$1.23
Puerto Rican (Type 46)	$0.909
Sun-cured (Type 37)	$1.094
Cigar binder (51 - 52)	$1.212
Cigar binder and filler (types 42 - 44, 53 - 55)	$0.907

Earlier USDA announced the support level for 1983-crop flue-cured tobacco at $1.699 per pound, the same as the 1982 support level.

This legislation will help insure the successful operation of the tobacco program at no net cost to the taxpayer. As in the past, USDA will set individual grade loan rates and grower contribution to the no-net-cost funds or accounts, before the marketing season begins.

Source: Foreign Agriculture Circular FT-8-83, August 1983

WEST GERMANY

West Germany's planted area continued its downward trend when about 3000 hectares were planted in 1983. Production could top 8000 tonnes with dark air- and sun-cured tobacco and burley tobacco comprising the majority of the crop. Imports of flue-cured tobacco are expected to remain steady since the initial decline when the tax on cigarettes in West Germany increased by 32% July 1, 1982.

PORTUGAL

On May 30, the retail price of cigarettes jumped about 25% as a result of a large increase in the excise tax. The new consumer price includes a fixed marketing margin of 2.5% for the wholesalers and a 6.5% retail margin. Portuguese consumers are now paying about $CND 0.55 to $CND 1.20 per package of 20 cigarettes.

MEXICO

Manufacturers increased retail prices about 30% in early May when the Mexican government removed cigarettes from the official control list. The continued decline in consumption is expected.

CHINA

In China, R.J. Reynolds Tobacco International reportedly signed a joint venture agreement, which is expected to produce about 1.5 billion cigarettes annually. The U.S. firm will supply machinery and technology, while the Chinese firm will provide land and labor. The cigarettes produced, with brand name yet to be determined, will be a blend of American and Chinese leaf.

This is not the first business accord with American tobacco manufacturers and this new venture indicates continued Chinese interest in importing foreign cigarette manufacturing technology and equipment to upgrade China's cigarette production. Use of foreign names may be seen as help for boosting exports of cigarettes to earn foreign exchange. At the same time, it is believed that the cigarettes will be well received by domestic smokers, provided reasonable prices are set. Availability of foreign brands may appeal to Chinese smokers who face limited supplies of imported and good domestic quality cigarettes.

Source: Foreign Agriculture Services, USDA World Report, July 7, 1983

TABLE 1. CANADA – EXPORTS, REDRIED LEAF BY TYPES

Types		6-month period ending June 1983
		kg
Flue-cured (bright)	U.K.	3,135,875
	Total	8,586,377
Burley	U.K.	–
	Total	–
Dark (air or fire-cured) Cigar Leaf Raw Leaf	U.K.	147,690
	Total	1,103,144
Tobacco N.E.S.[1]	U.K.	813,928
	Total	2,769,360
All types	U.K.	4,097,493
	Total	12,458,881

[1]Tobacco Not Elsewhere Specified includes stems and cuttings.

TABLE 2. EXPORTS OF REDRIED LEAF BY COUNTRIES

	6-month period ending June 1983
	kg
United Kingdom	4,097,493
British West Indies	94,661
Other Commonwealth	354,950
Foreign	7,911,777
Total	12,458,881

Source – External Trade Division
Statistics Canada

TABLE 3. CANADA — IMPORTS OF LEAF BY TYPES

Types		6-month period ending June 1983
		kg
Flue-cured, unstemmed	U.S.A.	—
	Total	—
Turkish, unstemmed	U.S.A.	—
	Total	—
Cigar, unstemmed	U.S.A.	2,346
	Total	55,602
Cigar, stemmed	U.S.A.	95
	Total	14,751
Unstemmed N.E.S.[1]	U.S.A.	4,027
	Total	118,269
Stemmed N.E.S.[1]	U.S.A.	1,108,324
	Total	1,742,744
All types	U.S.A.	1,114,792
	Total	1,931,366

[1]Not Elsewhere Specified.

TABLE 4. IMPORTS OF LEAF BY COUNTRIES

Country	6-month period ending June 1983
	kg
Cuba	—
Indonesia	—
Europe	122,427
United States	1,114,792
Other Foreign	694,147
Total	1,931,366

Source — External Trade Division
Statistics Canada

CLIMATIC CONDITIONS OF TOBACCO GROWING AREAS – CANADA

	Air Temperature °C			Soil Temp °C							
	Mean Max	Mean Min	High Max (Date)	Low Min (Date)	20 cms	50 cms	Total Pcpn (mm)	Most Pcpn (Date)	P.E. (mm)	Deg. Days (5°C)	Accum. Degree (Days) (May 1)
COMPARATIVE DATA											
MAY											
Delhi											
Monthly	16.1	5.1	23.0(14)	−1.5(17)	–	–	133	30(19)	93	6	6
30-year	19.0	6.5	32.2	−6.1	12.7E	11.3E	73.5	59.9		238	238
Harrow											
Monthly	17.1	7.3	24.0(14)	−0.5(9)	10.7	11.8	170	89(1)	92	223	223
30-year	19.4	8.9	33.9	−3.9	12.6	11.3	72.6	54.4		234	234
Ridgetown											
Monthly	16.1	6.7	24.0(14)	−1.5(9)	–	–	120	27(19)	86	3	3
30-year	18.9	8.0	33.9	−6.7	12.7E	11.7E	67.3	76.2		261	261
L'Assomption											
Monthly	15.1	6.2	22.0(13)	−1.0(17)	10.4	8.3	177	26(2)	78	10	10
30-year	18.5	5.9	33.3	−7.2	11.2E	9.8E	72.2	49.8		227	227
Charlottetown											
Monthly	13.9	5.6	18.5(1)	−1.0(18)	10.3	8.9	205	64(25)	70	2	2
30-year	13.6	4.3	31.7	−6.7	6.8	5.5	79.8	51.3		131	131
Kentville											
Monthly	16.1	6.4	23.0(31)	−1.0(18)	13.4	11.5	144	29(25)	86	195	195
30-year	16.1	4.6	32.5	−6.7	9.7	9.4	77.3	46.5		170	170
JUNE											
Delhi											
Monthly	26.8	15.7	31.0(27)	9.0(10)	26.4	–	62	35(27)	144	488	494
30-year	24.6	12.0	36.7	−1.7	18.0E	16.6E	71.1	94.5		400	638
Harrow											
Monthly	26.0	14.9	34.5(26)	6.1(1)	16.8	17.3	84	41(27)	141	464	687
30-year	24.8	14.5	37.2	1.7	17.9	16.5	75.4	57.2		372	606
Ridgetown											
Monthly	25.7	14.4	34.5(26)	6.0(8)	–	–	108	52(27)	140	452	455
30-year	24.5	13.6	37.2	−2.2	17.7E	16.6E	77.5	84.6		421	682
L'Assomption											
Monthly	25.0	11.7	32.5(14)	1.5(9)	17.4	14.9	41	10(17)	146	401	411
30-year	23.7	11.4	36.1	−1.7	17.0E	15.5E	84.3	103.1		377	604
Charlottetown											
Monthly	20.4	10.7	29.0(22)	6.5(6)	14.4	12.4	41	10(1)	111	317	319
30-year	19.7	10.1	31.7	−0.6	13.0	11.0	73.7	72.6		297	428
Kentville											
Monthly	22.5	10.5	32.0(22)	4.5(10)	16.1	15.0	39	13(2)	130	345	540
30-year	21.7	10.0	35.0	−1.7	15.6	14.9	71.2	50.3		326	496

Data compiled by S.N. Edey

	Air Temperature °C			Soil Temp °C							
	Mean Max	Mean Min	High Max (Date)	Low Min (Date)	20 cms	50 cms	Total Pcpn (mm)	Most Pcpn (Date)	P.E. (mm)	Deg. Days (5°C)	Accum. Degree (Days) (May 1)
JULY											
Delhi											
Monthly	28.3	16.3	33.5(15)	7.0(7)	27	–	141	42(28)	156	536	1030
30-year	26.9	14.4	40.6	3.3	21.1E	19.7E	70.7	117.6		486	1124
Harrow											
Monthly	28.6	18.8	34.0(15)	9.0(6)	20.6	21.2	61	11(29)	148	580	1267
30-year	27.0	16.9	40.6	5.6	21.2	19.8	79.2	74.4		481	1087
Ridgetown											
Monthly	28.5	18.0	34.0(15)	8.0(6)	–	–	152	61(28)	150	566	1021
30-year	26.9	16.1	40.6	2.8	21.2E	20.0E	72.5	113.0		511	1193
L'Assomption											
Monthly	27.2	15.1	34.5(4)	7.0(10)	19.6	17.8	59	16(29)	151	501	912
30-year	26.3	14.0	37.2	3.3	20.4E	19.0E	93.1	65.0		470	1074
Charlottetown											
Monthly	22.4	14.4	30.0(5)	9.5(8)	16.9	15.0	88	41(22)	112	415	734
30-year	23.3	14.4	33.3	2.8	16.6	14.7	80.5	58.0		430	858
Kentville											
Monthly	25.2	14.1	31.0(28)	7.0(11)	17.5	19.5	77	52(22)	138	454	994
30-year	24.9	13.3	36.1	2.8	19.3	19.1	70.2	78.7		439	935

SUPPLEMENTARY DATA

FALL Frost (°C)	Delhi	Harrow	Ridgetwn	L'Assompt	Chrltwn	Kentville
10%	Sept 13	Sept 29	Sept 27	Sept 13	Oct 3	Sept 14
50%	Sept 29	Oct 14	Oct 13	Sept 23	Oct 15	Oct 1
90%	Oct 13	Oct 28	Oct 30	Oct 6	Oct 27	Oct 20
Seasonal Means (May 1 – Sept. 30)						
Rain – mm	388	372	366	433	404	400
P.E. – mm	564	574	570	551	441	545
Irrigation Requirement – mm	245	213	202	189	184	184
Average Annual pcpn	935	837	850	965	1077	1178

P.E. = Potential Evapotranspiration (Estimated)

Irrigation requirements are for a storage capacity – 50 mm
consumptive-use factor – 0.75, and risk level – 10%

30-year normals (1951-1930) are compiled by the Atmospheric Environment Service, Toronto.

Mr. Edey is an agrometeorologist with Agrometeorology Section, Land Resource Research Institute, Agriculture Canada, Ottawa.

POSTSCRIPT

TOBACCO PUBLICATION The Economist Intelligence Unit, London, England, has released a publication entitled "Tobacco and Food Crops Production in the Third World: Competition or Complementarity?"

The book explores this concept and puts forward valuable policy-making information for Third World governments. The issue is covered from every angle and is a 154-page report. One of the major findings is that tobacco is only grown on 0.37% of the total arable and permanent crop land in the Third World. On the labor side, tobacco does compete with food crops.

The conclusion indicates the real problem is the inadequate distribution of the food that is grown. Readers wishing copies can order from The Editor, World Tobacco, 21 John Adam Street, London WC2, England; price is £90.

NEW BOOK AVAILABLE World Tobacco has edited a tremendously timely book entitled: "Tobacco: Generator of Wealth". Creation of wealth is important for a developing world. Tobacco is such a crop! The production and manufacturing of leaf tobacco into tobacco products is special. Taxation by governments is also a generator of wealth.

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WORLD TOBACCO SYMPOSIUM Have you registered for the World Tobacco Symposium in The Hague, Netherlands, April 16 to 18, 1984? Topics: April 16, — Is western Europe moving towards self-sufficiency in leaf tobacco? April 17, — The management of cigarette smoking performance. April 18, — The duty-free highway into international trade.

Fees are as follows: NFI 1695 for 3 days
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Send your business card or write to The Organizer, World Tobacco Symposium, 21 John Adam Street, London WC2, England, or telex 948669 TOPJN/G in London. See you there . . .

PIPE SMOKING INFORMATION "All you need to know about pipe smoking" is a handy 30-page booklet published by The Pipesmokers' Council, London, England. The booklet covers the story of the pipe, Briar Triumphant, pipe selection, tobaccos, filling your pipe and other interesting topics.

TOBACCO PRICE ARTICLE The Bureau of Agricultural Economics, Canberra, Australia, recently released an interesting and enlightening article entitled "World tobacco prices; relevance to the Australian industry" written by P. Hicks, S. Blank and C. Davis. The authors attempt to answer 3 questions: 1. Why identify a world tobacco price? 2. What is a 'world' price? 3. What is the outlook for world tobacco prices?

The authors answer these questions in order to predict the impact on domestic grower prices. They conclude "to eliminate the gap between the prices of Australian tobacco and the prices of its closest substitutes (non-U.S. imports), the margin between U.S. and Australian prices would have to be lowered."

The article may be found in: ***Quarterly Review of the Rural Economy,*** Volume 5, Number 2, May 1983. ISSN 0156-7446.

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15 Domestic 15 Export
Getoba - 3.5 - 4.0 MKG
Stocks from 83 crop 21 m KG
8 Export Quality
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Topping - sucker control
- Stalk-cutting
- Two trails

Turkey 1.9 Hect Bu.
12. Hect Va
6 Hect G-28
3 Hect NCNair 944
3 Hect Coker

Ada pasair
Bucak - Antalya (near)

Italy - G-K. Burley Caserta
Va. Trestina
Delta Tina
Verona CTV.

cost production $ 2.25/kg

Greece 115,000 metric tons - U.S 628,000
Turkey 221,000 metric tons -
Italy 140,000 metric tons -
Yugoslavia 80,000 metric tons

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